THE EDUCATIONAL COMMENTARY ON
CURRENT AFFAIRS

Issued by the DAILY WORKER in association with the Marx Memorial Library

No. 5 JULY 4th, 1955

AUTOMATION. BENEFIT OR MENACE?

What should be Trade Union Policy ?

A NEW word "automation" has entered the language. Technical newspapers are full of details as to what this means with regard to production in the future. The Press has already coined the phrase "robot factory" to describe the situation, possible soon it is alleged, in which a handful of men supervise an automatic factory of vast productive potentialities.

The Institution of Production Engineers held a conference in Margate from June 16 to 19 discussing "The Automatic Factory: What Does It Mean?"

This commentary describes what is the essence of automation, how quickly it is likely to be applied in Britain, what problems it will create and what the Labour movement will find it necessary to do about it.

Automation applies to office work as well as factory work, but this commentary will deal mainly with its application to factory work and its likely consequences.

What is the meaning of the term Automation ?

IN a conference on "What is Automation" an American, Mr. R. K. Geiser, has defined it as "the accomplishment of a job by an integrated mechanism with a minimum of assistance of any kind."

It can be regarded **in one aspect** as a further development of mechanisation. The invention of machinery went some way to replace human effort, but the individual machine still in most cases needed a human controller or supervisor. In automation this control and supervision is to a large extent done by other machines (using that term in the widest sense to cover all kinds of devices including the so-called electronic brains).

There is, of course, a considerable degree of automisation already existing, particularly in newer industries like oil refining, many branches of chemicals, rayon production, food processing, flour milling, paper making and oil refining. These are in the main comparatively new and expanding industries and processes and when automation is applied on a large scale it does not tend to make redundant a previously existing labour force.

There was, for example, no large British oil refining industry employing large numbers of workers before the war. The newly developing industry had to recruit new labour. There could therefore be no resistance to the adoption of the utmost degree of automation that is possible.

This will be by no means the case if automation is applied on the widest possible scale to an existing large scale industry employing masses of workers and threatening them with unemployment as, for example, the motor industry.

Are there examples from industries where automation is operating ?

AUTOMATION has made very considerable progress in the various processing units of the Esso Petroleum Company's refinery at Southampton. It will be some time, however, before automation has reached such a stage that the separate plants of the refinery can be controlled from one single control room. Nevertheless, the degree of automation in the various production units is impressive.

In the fluid catalyctic cracking plant, which is one of the key plants of the refinery, an elaborate system of automatic controls maintain both a heat and a pressure balance.

Only five men per shift are needed to ensure the smooth running of this plant which runs for long periods of time with only small adjustments being necessary.

The automatic controls of certain processing units of an oil refinery are designed to ensure smooth operation.

The next step forward is said to be the development of instruments which will act automatically to ensure that a high level of quality of the various products is maintained.

At present samples of the products from the various units are taken to the laboratory and there analysed, so that after analysis, which may take some time, any necessary adjustments to maintain or improve the quality of the product can be made in the processing unit.

Instrument manufacturers are now engaged in seeking to design the necessary instruments which would enable quality of product to be automatically maintained.

However, as the demand for oil is likely to develop rapidly it is not likely that such developments will create any unemployment (we refuse to use the masked word redundancy) in the oil refinery industry.

What of the effect of Automation in the Motor Industry?

HERE we are on a different footing from the oil industry. There are 330,000 workers employed in the manufacture of motor vehicles and bicycles. If automation was rapid it would throw many of them out of work or, alternatively, put many on short time, even in the event of the price of cars being reduced and more cars sold. This fear is beginning to assume considerable proportions in the motor industry of the U.S.A. where automation is being extended on a considerable scale.

The automatic transfer machine is the outstanding feature of automation as applied to the motor industry. This is a logical development from the flow production system which has been in operation in this industry for a number of years.

Before the inauguration of the flow production system it was usual to group machines of the same type.

In the flow system, machines of different types were laid out in the order of manufacture. The moving of work from one machine to another was done manually, usually with some assistance from conveyors or some similar type of mechanism.

The transfer machine moves the component which is being produced from one machine operation to another mechanically, without any intermediate handling at all.

Most of the publications on automation give examples of the transfer machine, which produces cylinder blocks at the Austin motor factory in Birmingham.

Only two workers are employed on this machine, one loading and the other unloading.

There are 13 stations (points at which the block is machined) on the machine and the material which will ultimately emerge as a completed cylinder block is transferred from one station to the other mechanically. The work goes on simultaneously at all 13 stations, and when the cycle of operations is completed each block moves one station forward.

Austins say that this transfer machine is cheaper than the group of old machines that it substituted. It occupies less floor space, it uses less power, it turns out 3,000 cylinder blocks per week as compared with 2,500 turned out by the line of old machines.

In the American Ford plant rough castings are converted into finished cylinder blocks by 532 operations performed at 20 different stations.

In America the cylinder block for the Pontiac car is produced on a line 1,300 feet long. There are nine transfer machines on the line (each with its sequence of stations) and six special machines. There is complete automatic handling along the whole line.

In Moscow the Stanhokonstruktsia factory produces 3,500 piston heads per day by automation. The factory works on a three-shift system with nine men per shift. There is one general controller at the electronic nerve centre, a labourer who loads aluminium ingots on a conveyor at the beginning, two machine minders and five skilled maintenance men. All the transfers down the 150 feet line are automatic. According to Mr. S. Lilley: " More than 1,500 electrical instruments control the entire process. If a breakdown occurs, the machine stops automatically, and lights a signal lamp at the control desk. The controller phones

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one of the men on the line or one of the maintenance workers to have the fault attended to. The factory is claimed to cut total staff to one-quarter of that previously required, manual workers to one-sixteenth and production costs to one half." (Discovery. April 1955).

Speaking at the conference of production engineers, above mentioned, Mr. Frank Woollard described what is new about present-day automation as compared with previous developments of mechanisation.

" What is new is the extension of automatic operations to the hard, heavy, awkward and unyielding shapes of those components used in industries which are based on egineering practice, the adoption of controls—electronic or otherwise—and the institution of feed-back apparatus and servo-mechanisms to ensure that accuracy is maintained within pre-determined limits.

" It is for many, something of a shock to see an automobile cylinder block ' flowing ' through all the many operations necessary to complete it for embodiment in a motor car with the same apparent ease as the operation of filling and sealing bottles in a milk distribution centre.

" It is, of course, the in-line transfer machine, coupled with interoperation transfer mechanisms, that have so much caught the imagination because these, associated with automatic assembly, would make it appear that the automatic factory or ' ultimate automation ' as the Americans call it is just round the corner." (Mr. Woollard advanced a number of reasons why it is not just round the corner).

An important development of automation is automatic inspection of the component in the process of production. This involves not only the non-human inspection of products, with the rejection of the defective ones, but also the automatic correction of the fault in the mechanism which is giving rise to defective production.

What will be the effect of Automation on the position of the workers ?

IT should be remembered that the fact that power to produce is enormously increased is no guarantee that workers standard will rise.

The pictures drawn by enthusiastic production engineers of automation being speedily rushed through, of a Second Industrial Revolution, ignore the fact that production in capitalist society is not aimed at improving the workers standards but at achieving the maximum profit. Only in so far as big possibilities of profit are present will automation be undertaken at all.

It is wrong to predict developments on the basis that capitalist production will continue uninterrupted, reaching ever higher technical levels. The very considerable technical development in the U.S.A. after the First World War was rudely interrupted by the great unemployment crisis of 1929-33 and the " depression of a special kind " (with unemployment never below the seven million mark) which lasted till 1940. Even since the war we have had in the U.S.A., the most technically developed capitalist country, the crises of 1949 and 1953-54 where unemployment reached the six million mark. (At the moment of writing it is three million.)

It is therefore an illusion harmful to the interests of the workers movement to imagine that technical change, without a change to social ownership of the means of production, will release the great potentialities for good which undoubtedly exists in automation.

Nothing could be more false than to assume that highly mechanised or highly mechanised industries are necessarily high wage industries. They could be if the workers were organised in militant trade unions. They need not be, however.

Apart from the motor industry the most highly mechanised industries in Britain today are paper-making, printing, flour milling, chemical manufacture, petroleum products and food processing, packaging and bottling. Apart from printing none of these have the reputation of being high wage industries.

Automation in some industries where the conditions are suitable for it is likely to be held up by the refusal of the capitalists to risk the very considerable investment which is involved. In the last few years 16 per cent of the Gross National Product in Britain has gone into fixed capital expenditure. The most of this, however, has been in the form of Central and Local Government Expenditure (35 per cent), Nationalised Industries (20 per cent). The great capitalist companies which control the most of Britain's industry accounted for only 30 per cent, and private persons and small traders 15 per cent. There is no sign of a vast capital expenditure programme on the part of private industry which will transform Britain by a Second Industrial Revolution in the next 20 years.

This does not mean that there will not be automation on a large scale in certain industries.

The chemical industry, which by its very character is considerably automatised, is going steadily ahead with plans for capital development.

The steel industry aims to spend £300 million between 1953 and 1958 on new plant. Of this £75 million is to be spent on raw materials handling and treatment and blast furnaces and £90 million on mills and finishing, all involving a fair degree of automation.

It is in the motor industry that the greatest capital development programmes are being developed.

The two great American companies with large plants in Britain, the Ford Motor Company and Vauxhall Motors (a subsidiary of the American General Motors), have five-year programmes which will cost them £65 million and £35 million directly.

Fords are to build machine shops at the new town of Basildon and a spare parts depot at Aveley, Essex.

The Vauxhall factories at Dunstable and Luton have to be greatly expanded.

Both firms claim that these new developments will lead to the employment of more workers.

The British Motor Corporation (Austins and Morris), the Rootes Group and Standard Motors all announce programmes of expansion.

The application of automation as part of these plans could easily lead to mass unemployment.

The first requisite of defence is to strengthen the trade unions and particularly their shop stewards organisation.

The unions must be prepared to make special demands on the motor firms where automation is being introduced.

They must insist that the firms be prepared to consult the unions **beforehand** on all questions with regard to the manning of machines.

The unions should insist immediately on a shorter working day and week in all factories where automation procedures are being introduced, and on higher hourly rates of wages.

Should the unions go in for a guaranteed annual wage on the model of the Automobile Workers Union of America ?

It should be noted that the agreements arrived at by the union and the American motor firms amount at a supplementation of unemployed benefit by the companies and have no relation to the original demand for a guaranteed annual wage.

As a minimum the unions should insist on the firms carrying their existing labour force until jobs can be found for them.

The ultimate solution to ensure that automation will not create unemployment but will on the contrary raise the workers standards, depends on the industries being taken over by the workers and geared to raising their standard of life.

What is the attitude of the Soviet Union to Automation ?

IT is regarded as one of the principal means for enabling the Soviet Union to advance to the classless Communist Society.

The new " Political Economy Textbook " says : " The material basis of Communism, that is being created in the U.S.S.R., rests on large scale machine production in the towns and in the countryside ; on the electrification of the whole country ; on complete mechanisation and automisation and on the comprehensive application of chemical processes to production."

This will enable production to be raised to such a height that the working day can be reduced to six hours, that the educational level of all citizens can be raised, that the distinction between manual and mental labour and between town and country will largely be superseded. Then the stage will be reached when the formula of distribution can be " from each according to his ability, to each according to his needs."

Printed for the People's Press Printing Society Ltd., 75 Farringdon Road, London, E.C.1. by the
Leicester Co-operative Printing Society Ltd., 99 Church Gate, Leicester, also Kettering and London